Bricklayer

2000

Human Resources Development Canada
Développement des ressources humaines Canada
Canada

101-01179/

Occupational Analyses Series

Bricklayer

2000

Interprovincial Partnerships and
Occupational Information Division

Human Resources
Partnerships Directorate

Division des Partenariats
interprovinciaux et Information sur
les carrières

Direction des partenariats en
ressources humaines

Disponible en français sous le titre :

Briqueteur-maçon/briqueteuse-
maçonne

Bricklayer

© Her Majesty the Queen in Right of Canada, 2000
Cat. No.: MP32-11/70-2000E
ISBN: 0-662-28592-1

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this occupational analysis as the national standard for the occupation of bricklayer.

ACKNOWLEDGEMENTS

Human Resources Development Canada (HRDC) wishes to express sincere appreciation for the contribution of the many industrial establishments, professional associations, labour organizations, trades persons, provincial and territorial government departments and agencies, and all others who contributed to this publication.

Special acknowledgement is extended to Orest Cap, Ihor Cap and Viktor Semenovych from Winnipeg, Manitoba, who developed the analysis with the following representatives from the bricklayer industry:

Joseph Bognar	Ontario
Paul Bordage	New Brunswick
Andy Funk	Manitoba
Sydney Frost	Prince Edward Island
Brian Gebhardt	Manitoba
Robert Hardy	Quebec
Serge Harnois	Quebec
Joachim (Joe) Hoffman	Yukon
George Larocque	Alberta
John Leonard	Newfoundland
Mo Marion	Saskatchewan
Peter Sartorius	Ontario
Lester Troy Turner	Nova Scotia

This analysis was prepared by the Human Resources Partnerships Directorate of HRDC in partnership with the Saskatchewan Apprenticeable Trades Coordinating Group (ATCoG). The overall planning and coordination of the development of this analysis were undertaken by staff members of HRDC's Interprovincial Partnerships and Occupational Information Division.

OTHER RELATED OCCUPATIONAL TITLES

This analyses covers tasks performed by a bricklayer whose occupational title has been identified by some provinces and territories of Canada under the following names:

- Bricklayer - Mason
- Brick and Stone Mason
- Mason

LIST OF PUBLISHED OCCUPATIONAL ANALYSES *

TITLE	NOC** Code
Appliance Service Technician (1997)	7332
Aquaculture Technician (1977)	2221
Arts Administrator (1989)	0114
Automotive Painter (1995)	7322
Automotive Service Technician (1998)	7321
Automotive Technician - Automatic Transmission (1990)	7321
Automotive Technician - Electrical/Electronics (1992)	7321
Automotive Technician - Engine Repair and Fuel Systems (1989)	7321
Automotive Technician - Front-End (1989)	7321
Automotive Technician - Manual Transmission, Driveline and Brakes (1990)	7321
Aviation Machinist (1994)	7231
Baker (1997)	6252
Blaster (Surface) (1987)	7372
Boilermaker (1994)	7262
Bricklayer (2000)	7281
Cabinetmaker (2000)	7272
Carpenter (1998)	7271
Cement Finisher (1995)	7282
Construction Electrician (1994)	7241
Cook (1997)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician - Consumer Products (1997)	2242
Electronics Technician Vol. I (1986) (Video Equipment)	2242
Electronics Technician Vol. II (1986) (Audio Equipment)	2242

* **Red Seal analyses are indicated in bold**

** **National Occupational Classification**

Electronics Technician Vol. III (1986) (Computer Equipment)	2242
Electronics Technician Vol. IV (1986) (Office Equipment)	2242
Electronics Technician Vol. VI (1986) (Communication Equipment)	2242
Electronics Technician Vol. VII (1986) (Signaling Equipment)	2242
Electronics Technician Vol. VIII (1986) (Navigation Equipment)	2242
Electronics Technician Vol. IX (1986) (Video Game Equipment)	2242
Electronics Technician Vol. X (1987) (CADD Equipment)	2242
Electronics Technician Vol. XI (1987) (CAM Equipment)	2242
Electronics Technician Vol. XII (1987) (Robotics Equipment)	2242
Electronics Technician Vol. XIII (1987) (Biomedical and Laboratory Equipment)	2242
Electronics Technician Vol. XIV (1987) (Industrial Process-Control Equipment)	2243
Farm Equipment Mechanic (2000)	7312
Floorcovering Installer (1997)	7295
Glazier (1994)	7292
Hairstylist (1997)	6271
Heating (Gas and Oil) Servicer - Commercial and Industrial (1978)	7331
Heavy Duty Equipment Mechanic (1998)	7312
Heavy Equipment Operator (1983)	7421
Industrial Electrician (1997)	7242
Industrial Instrument Mechanic (2000)	2243
Industrial Mechanic (Millwright) (1999)	7311
Insulator (Heat and Frost) (2000)	7293
Ironworker (Generalist) (1993)	7264
Lather (Interior Systems Mechanic) (1994)	7284

Logistics (1992)	0713
Machinist (1998)	7231
Major Electrical Appliance Repairer (1984)	7332
Mobile Crane Operator (1997)	7371
Motorcycle Mechanic (1995)	7334
Motor Vehicle Body Repairer (Metal and Paint) (1997)	7322
New Home Builder and Residential Renovation Contractor (1992)	0712
Oil Burner Mechanic (1997)	7331
Painter and Decorator (2000)	7294
Partsperson (1995)	1472
Plumber (1996)	7251
Power Engineer (1997)	7351
Powerline Technician (1996)	7244
Recreation Vehicle Mechanic (2000)	7383
Refrigeration and Air Conditioning Mechanic (1997)	7313
Roofer (1997)	7291
Sheet Metal Worker (1997)	7261
Sprinkler System Installer (1995)	7252
Steamfitter-Pipefitter (1996)	7252
Steel Fabricator (Fitter) (1994)	7263
Tool and Die Maker (1997)	7232
Truck-Trailer Repairer (1994)	7321
Truck and Transport Mechanic (2000)	7321
Welder (1996)	7265

REQUESTS FOR THESE PUBLICATIONS SHOULD BE FORWARDED TO:

Interprovincial Partnership and Occupational Information Division
Human Resources Partnerships
Human Resources Development Canada
Place du Portage, Phase IV, 5th Floor
Hull, Quebec K1A 0J9

FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of occupational analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;
- to identify those tasks that are performed by skilled workers in every province and territory;
- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility, in Canada, of trainees and skilled workers;
- to supply employers and employees, and their associations, industries, training institutions and governments with analyses of the tasks performed in particular occupations.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	i
OTHER RELATED OCCUPATIONAL TITLES	ii
LIST OF PUBLISHED OCCUPATIONAL ANALYSES	iii
FOREWORD	vii

Guide to Analysis

DEVELOPMENT OF ANALYSIS	xv
STRUCTURE OF ANALYSIS	xv
VALIDATION METHOD	xvii
SCOPE OF THE BRICKLAYER OCCUPATION	xix
OCCUPATIONAL OBSERVATIONS	xx
SAFETY	xxi

Analysis

BLOCK A	**WORK RELATED ACTIVITIES**		
	Task 1	Determines project requirements, building codes and safety requirements from blueprints and specifications.	3
	Task 2	Uses tools, machines, equipment and materials.	5
	Task 3	Assembles, dismantles, erects scaffolding, rigging and hoisting equipment.	7
	Task 4	Installs membrane, air barrier and insulation.	10
	Task 5	Winterizes job site.	12
	Task 6	Prepares mortar.	13
	Task 7	Builds cavity wall.	15

			Page
BLOCK B	**MASONRY WALL AND COLUMN SYSTEM**		
	Task 8	Builds veneer walls.	16
	Task 9	Builds structural and/or foundation masonry walls.	19
	Task 10	Installs stone cladding.	20
	Task 11	Lays masonry to prefabricated wall panels, columns covers, spandrels, balcony screens and other masonry panels in a factory.	21
BLOCK C	**CHIMNEYS, FIREPLACES, MASONRY HEATERS AND REFRACTORY MATERIALS**		
	Task 12	Lays bricks or other masonry units to build fireplaces, masonry heaters, residential, commercial and industrial chimneys.	24
	Task 13	Lays refractory or acid-resistant wall system/bricks to line or reline furnaces, kilns, ladles, vessels, tanks, and similar installations.	27
BLOCK D	**CONSTRUCTION/LAYOUT OF MASONRY ARCHES**		
	Task 14	Builds templates for arches.	28
	Task 15	Builds arch.	29
BLOCK E	**RESTORATION**		
	Task 16	Prepares mortar and grouting systems.	31
	Task 17	Rebuilds masonry work.	32
	Task 18	Restores existing masonry work.	34
	Task 19	Cleans masonry.	36
	Task 20	Protects masonry surfaces.	36

Page

BLOCK F ORNAMENTAL MASONRY

Task 21	Lays masonry units to build walls, piers, various floors, patios and other similar installations.	38
Task 22	Installs glass blocks.	39
Task 23	Installs overlay applications.	40
Task 24	Installs sculptured masonry.	42

Appendices

Appendix "A"	Tools and Equipment	45
Appendix "B"	Glossary	49
Appendix "C"	Blocks and Tasks Weighting	55
Appendix "D"	Pie Chart	61
Appendix "E"	Task Profile Chart	63

GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources Development Canada for translation and then returned to the consultant for review to ensure conformity with the nationally approved format.

The consultant will then forward a copy of this analysis to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

STRUCTURE OF ANALYSIS

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK** - is the largest division within the analysis and reflects a distinct operation relevant to the occupation.

B. **TASK** - is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".

C. **SUB-TASK** - is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK".

Supporting Knowledge & Abilities

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

Trends

Any shifts or changes in technology which affects the block are identified under this heading.

Related Components

All components of a specified task being undertaken by the bricklayer and the stone mason are identified under this heading.

Tools and Equipment

All tools and equipment necessary for the bricklayer to complete a task are identified under this heading.

VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization SubCommittee developed a method for the validation of the national Red Seal occupational analyses.

A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analyses identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations.

DEFINITIONS

YES:	the sub-task is performed by workers in the occupation in a specific jurisdiction.
NO:	the sub-task is not performed by workers in the occupation in a specific jurisdiction.
BLOCK %:	the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each block of the analysis.
TASK %:	the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each task of the analysis.
NV:	Not Validated by a province/territory.
ND:	Not Designated in a province/territory.

PROVINCIAL/TERRITORIAL ABBREVIATIONS

NF:	Newfoundland and Labrador
NS:	Nova Scotia
PE:	Prince Edward Island
NB:	New Brunswick
QC:	Quebec
ON:	Ontario
MB:	Manitoba
SK:	Saskatchewan
AB:	Alberta
BC:	British Columbia
NT:	Northwest Territories
YK:	Yukon

COMMON CORE

The criteria for determining common core are dependant on the performance of sub-tasks. If 70 percent of the responding jurisdictions (excluding NVs and NDs) perform the sub-task, it shall be considered common core.

Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination.

BLOCKS AND TASKS WEIGHTING (APPENDIX "C")

This appendix represents the block and task percentages as submitted by each jurisdiction.

Each jurisdiction, with the use of a provincial/territorial occupational advisory committee, validates the content, places percentages on blocks and tasks, and indicates whether or not the sub-tasks are performed by the skilled workers within the occupation. The results of this exercise are submitted to the consultant who then analyzes the data and develops this appendix which provides the individual jurisdictional validation results as well as the national averages of all responses.

PIE CHART (APPENDIX "D")

The graph depicts the national percentages assigned to blocks in the analysis.

SCOPE OF THE BRICKLAYER OCCUPATION

The term "bricklayer" defines a person who is capable of building walls, floors, arches, pavings, partitions, fireplaces, chimneys, smokestacks and other structures with brick, stone, precast masonry panels, glass block, concrete block, light-weight insulated panels, insulation and other masonry units. Bricklayers work on industrial, commercial, institutional and residential buildings. They may be called upon to erect, install, maintain, repair and alter various work.

The bricklayer has the abilities, knowledge and skills to perform various simple and complex functions such as: drafting and reading blueprints, communicating with project staff, dealing with job related safety aspects, installing the ornate exterior of buildings, using cleansing solutions, working with natural and artificial stones, installing firebrick and refractory tiles, using varied hand and power tools to align, adjust, cut and trim all bricks, concrete blocks and other masonry units to specifications.

Bricklayers are incorporating the use of lasers to assist them at their task and are called upon sometimes to perform some non-traditional tasks such as welding, anchors and other components in refractory operations.

OCCUPATIONAL OBSERVATIONS

Some significant trends emerged from this national occupational analysis of the bricklayer occupation. These trends are outlined in this section.

Information generated by our panel of expert bricklayers indicates that the bricklaying trade has essentially retained most of its traditional competency requirements. Bricklaying is still a craft and labour intensive occupation. Technological change has not significantly influenced the skill requirements. Some innovations however have helped to increase productivity and improve workplace safety.

In general, bricklayers are employed in residential, commercial, industrial and institutional projects. Some are self-employed and others involved in masonry work on subcontracting basis, or are employed in unionized jobs.

The bricklayers may be called upon to perform all the duties identified in this analysis; however, a significant proportion of them are involved in erecting brick veneered walls and restoring existing structures. The increasing popularity of brick and other masonry units will stimulate demand for bricklayers. Additionally, some bricklayers are specializing in very specific duty areas such as refractory work and prefbricated masonry components. Seventy percent of masonry work is performed outside. The winterization of job sites allows work to continue year round.

Good workmanship, construction safety and accident prevention is a priority. Increased employee awareness for better quality of work life has resulted in improved awareness at job sites. Government legislation and higher industry standards has helped to improve construction site safety production.

SAFETY

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances which may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to cause an accident or injury.

It is generally recognized that a safety-conscious attitude and work practices contribute to a healthy, safe and accident-free working environment.

It is imperative to apply and be familiar with the Occupational Health and Safety Act and Regulations. As well, it's essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

As safety education is an integral part of a training in all jurisdictions, personal safety practices are not recorded in this document. However, the technical safety aspect relating to each task and sub-task are included throughout this analysis.

ANALYSIS

BLOCK A

WORK RELATED ACTIVITIES

Trends: *New developments are affecting the occupation on an on-going basis: environment friendly cleaning procedures, mortarless systems, increased use of concrete (colour) products, new air barriers and insulation, anchors/ties, high technology lasers, critical path methods/ program evaluation review technique and greater safety awareness.*

Task 1 **Determines project requirements, building codes and safety requirements from blueprints and specifications.**

Related Components: Engineering drawings, progress charts, contracts, workplace safety and health documents, specifications book, restoration manuals, international chapters, building code book and related manuals.

Tools and Equipment: Calculator, microcomputer, camera, metric and imperial scale rule, pencils, fax machine, cell phone, drafting square, compass, transit and laser level.

Sub-task

1.01 **Reads blueprints, specifications and other contract documents.**

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	NV

1.01.01 knowledge of building codes

1.01.02 knowledge of the National Building Code

1.01.03 ability to interpret specifications and other contract documents

Sub-task

1.02 Measures dimensions on drawings and interpolates according to scale.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	NV

1.02.01 knowledge of scale drawings

1.02.02 ability to calculate (Imperial/SI)

1.02.03 ability to convert from one system of measures to the other

1.02.04 ability to verify the integrity of plans

1.02.05 ability to verify measurements

Sub-task

1.03 Conducts job site safety assessment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

1.03.01 knowledge of occupational and safety regulations for construction projects

1.03.02 ability to communicate on technical matters

1.03.03 ability to write clearly when describing situations

Sub-task

1.04 Makes rough sketches of masonry work.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	NV

1.04.01 knowledge of isometric and orthographic projection

Supporting Knowledge & Abilities

1.04.02 ability to make neat freehand sketches in isometric and orthographic projections

Task 2 Uses tools, machines, equipment and materials.

Related Components: Pre-formed weep hole vents, weep holes and vents, air and vapour barrier materials, flashings, lumber, brick ties, mortar collecting system within cavity, aggregates, insulation, caulkings, load bearing plates, dyes, vertical and horizontal reinforcing, fastening systems, refractory mortars, brick, block, stone, pavers, fire stops, mortar, sand.

Tools and Equipment: Forklifts, scaffolding system, mason's tool box, pallet, jacks, mortar and concrete mixers, elevator, masonry saw and related blades, circular saw, shovels, pails, brushes, electrical cords, hoses, generators, compressors, measuring equipment, screen, power washers, hoisting equipment, caulking gun, screw gun, sledgehammer, mortar boxes, pick, scraper, wheelbarrow, bricktongs, stone splitter, staple gun, corner line posts, respiratory systems, cranes, lasers, pry bars, rubbing stone, concrete/grout pumps, mortar hoe, gloves, specialized chisels, welding equipment.

Sub-task

2.01 Uses hand tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

2.01.01 ability to use cutting tools

2.01.02 ability to maintain tools

2.01.03 ability to use measuring and layout tools

2.01.04 ability to use fastening tools

2.01.05 ability to use chisels and hammers

2.01.06 ability to use trowels

2.01.07 ability to use finishing tools

Supporting Knowledge & Abilities

2.01.08 ability to select correct hand tools for application

Sub-task

2.02 Uses portable power tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

2.02.01 ability to maintain portable power tools

2.02.02 ability to use portable planing tools

2.02.03 ability to use power drills

2.02.04 ability to use power saws

2.02.05 ability to use grinders

2.02.06 ability to use power-actuated tools

2.02.07 ability to use air-powered or pneumatic tools

2.02.08 ability to use portable sprayers

2.02.09 ability to select appropriate power tools

Sub-task

2.03 Operates machines and equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

2.03.01 ability to use masonry table saws

2.03.02 ability to use mortar mixers

2.03.03 ability to use propane heaters

2.03.04 ability to use high pressure washer

2.03.05 ability to use pneumatic machines and equipment

Sub-task

2.04 Uses material handling equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

2.04.01	ability to use lifting equipment
2.04.02	ability to calculate loads and weights
2.04.03	ability to operate material handling equipment
2.04.04	ability to operate forklift

Sub-task

2.05 Performs trade related welding activities.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	no	yes	no	yes	NV	no	no	no	ND	NV

2.05.01	knowledge of welding equipment
2.05.02	ability to cut with torch
2.05.03	ability to weld column ties
2.05.04	ability to weld or tack clips at the top of wall

Task 3 Assembles, dismantles, erects scaffolding, rigging and hoisting equipment.

Related Components: Lumber, tie wire, fastening systems, tarps, mud sills, protective scaffolding mesh, nails, safety warning signs, safety codes, engineering reports, assembly instructions, approved engineering drawings.

Tools and Equipment: Personal protective equipment and fall arrest systems, ropes, scaffolding frames, planks, base plates, tube and clamp system, side brackets, outriggers, automatic scaffolds, swing stage, screwjacks, hydraulic jacks, power jacks, elevator systems, ladders, telescopic posts, steel beams, guard rails, wire rope/steel cable, chain blocks, cranes, forklift, engineered hoarding equipment, rope and pulley system.

Sub-task

3.01 Selects scaffolds and hoisting equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.01.01	knowledge of various types of scaffolds
3.01.02	knowledge of load-bearing capacity of scaffolds
3.01.03	knowledge of maximum permissible span of scaffolds
3.01.04	knowledge of safe rigging and hoisting practices
3.01.05	knowledge of safety codes
3.01.06	ability to select appropriate scaffolds
3.01.07	ability to select hoisting and rigging equipment

Sub-task

3.02 Erects scaffolds.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.02.01	knowledge of personal protective equipment
3.02.02	ability to erect temporary utilities, services, and site access
3.02.03	ability to build and install temporary safety protection (hoarding and guard rails)

Supporting Knowledge & Abilities

3.02.04	ability to secure ladders
3.02.05	ability to fasten ties and brackets
3.02.06	ability to prepare proper footing
3.02.07	ability to erect scaffolds
3.02.08	ability to erect hoisting equipment

Sub-task

3.03 Hoists equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
no	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.03.01	ability to use hand signals
3.03.02	ability to be aware of all safety considerations
3.03.03	ability to operate hoisting equipment

Sub-task

3.04 Inspects scaffolds and hoisting equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.04.01	knowledge of critical components which require periodic inspection
3.04.02	ability to inspect scaffolds and hoisting equipment
3.04.03	ability to maintain scaffolds and hoisting equipment
3.04.04	ability to complete inspection checklist
3.04.05	ability to report inspection results

Sub-task

3.05 Works on scaffolds.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.05.01	knowledge of safety devices
3.05.02	ability to use safety harness and fall arrest system
3.05.03	ability to store materials, tools and equipment on scaffolds
3.05.04	ability to use machine scaffold

Sub-task

3.06 Dismantles scaffold and hoisting equipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

3.06.01	knowledge of dismantling practices
3.06.02	knowledge of proper storage and maintenance procedures
3.06.03	ability to dismantle scaffolds, hoisting and rigging equipment
3.06.04	ability to store scaffolds, hoisting and rigging equipment

Task 4 Installs membrane, air barrier and insulation.

Related Components: Vapour barrier, air barrier, moisture barrier, insulation, primers, caulking, sealants, adhesives, plastic laminates, ventilation systems, lumber, flashing system, metal and mechanical fasteners, tape, compartmentalization materials.

Tools and Equipment: Trowels, paint rollers, brushes, mason's tool box, torch, saws, respiratory system, fire extinguishers, handsaws, personal protective equipment, compressors, hoses, nozzles, spray on systems for barriers and insulation.

Sub-task

4.01 Prepares substrates.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	NV

4.01.01 knowledge of manufacturer's specifications

4.01.02 knowledge of WHMIS and MSDS

4.01.03 knowledge of surface preparation techniques

Sub-task

4.02 Applies membrane to substrate.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	yes

4.02.01 knowledge of manufacturer's specifications

4.02.02 knowledge of various processes for applying membrane

4.02.03 ability to apply membrane

4.02.04 ability to wear appropriate personal safety equipment

Sub-task

4.03 Installs insulation to membrane or substrate.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

4.03.01	knowledge of manufacturer's specifications
4.03.02	knowledge of procedures for fastening
4.03.03	knowledge of various fasteners and their capacity
4.03.04	knowledge of safety precautions
4.03.05	ability to install insulation

Sub-task

4.04 Installs air/moisture barrier.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

4.04.01	knowledge of types of air moisture barriers
4.04.02	knowledge of lock adhesive systems
4.04.03	ability to place anchors and ties
4.04.04	ability to install insulation

Task 5 Winterizes job site.

Related Components: Lumber, insulated tarps, tie wire, nails, engineered tarping system.

Tools and Equipment: Propane tanks, lights, generator, electrical cords, ventilation system, heaters.

Sub-task

5.01 Covers work and supply area.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	no	yes	yes	ND	NV

Supporting Knowledge & Abilities

5.01.01	knowledge of safe practices regarding use of heaters on building sites/site security
5.01.02	ability to build hoarding
5.01.03	ability to install tarpaulins

Sub-task

5.02 Heats work and supply area.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

5.02.01	knowledge of regulations and safe practices
5.02.02	ability to install portable electric or gas heaters
5.02.03	ability to warm water for preparing mortar
5.02.04	ability to warm sand for preparing mortar

Task 6 Prepares mortar.

Related Components: Sand, lime, cement, accelerator, portland, masonry cement, high strength cement, coloured cement and mortar, water, plasticizers, bonding agents, aggregates, sharp sand, coarse and fine aggregates, high temperature cement, epoxy and resin mortars, waterproofing, clays, dyes, brick dust, castables, cleaning solvents, retarders.

Tools and Equipment: Hoe, mortar box, shovels, wheelbarrows, mortar tubs, hoses, screens, mechanical mixer, mixing drills, vibrators, electrical cords, personal protective equipment, pails, mortar tables, masons trowel, rubber hammer, masons hammer, grease gun, gas cans, stop watch, mortar tower systems, pan mills.

Sub-task

6.01 Determines type of mortar.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

6.01.01	knowledge of the property of mortar : plasticity, body, strength, water-repellency, yield and colour
6.01.02	knowledge of the type of mortar
6.01.03	knowledge of mortar applications
6.01.04	knowledge of proper storage of sand, cement and limes at sites
6.01.05	knowledge of heritage/restoration mortars
6.01.06	ability to consult specifications when ordering mortar

Sub-task

6.02 Mixes mortar.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

6.02.01	knowledge of additives, such as: air entraining agent, retarders, colouring agents and plasticizers
6.02.02	knowledge of cold weather applications
6.02.03	knowledge of retempering mortar
6.02.04	ability to calculate quantities
6.02.05	ability to mix mortar manually and mechanically

Task 7 **Builds cavity wall.**

Related Components: Masonry units, air barrier, insulation, flashing, reinforcing vertical/horizontal, base plates, grout, ties (anchors) mortars, nails, power actuated accessories, adhesives, rigid insulation, stickclips, caulking, compressive backer rod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, cleaning agents, air barrier, shelf angles, fire stops, pressurized and compartmentalization strips, wedges.

Tools and Equipment: Mason's tool box, masonry blades, mortar mixer, mortar board, mason's saw, power actuated tools, grinder, pallet jack, scaffolds, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongs, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, tiger torch, adhesive trowel, scraper (floor), drills, welding machines, trowels, jointers levels, mason's line, line blocks.

Sub-task

7.01 Builds back-up wall. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

7.01.01 knowledge of horizontal reinforcement

7.01.02 knowledge of vertical reinforcement

7.01.03 knowledge of structural requirements for metal plates

7.01.04 knowledge of seismic requirements

7.01.05 ability to maintain measurements and bonds

7.01.06 ability to lay masonry units

Sub-task

7.02 Builds exterior wythe. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

7.02.01	knowledge of expansion and contraction of masonry units
7.02.02	ability to lay masonry units
7.02.03	ability to maintain measurement
7.02.04	ability to build with lines and levels
7.02.05	ability to maintain bonds
7.02.06	ability to construct weep holes

BLOCK B

MASONRY WALL AND COLUMN SYSTEM

Trends: *Increased use of non-corrosive materials, more efficient flashing, pre-engineered wall systems, premixed and coloured mortar, light weight-structured unit masonry and reinforced seismic masonry. Improvements in wall ties and return of load bearing walls. Increase use of sound barrier walls on highways and prefabricated units.*

Task 8 **Builds veneer walls.**

Related Components: Expansion and contraction joints, adjustable veneer ties, softjoints, masonry units, insulation, flashing, ties (anchors) mortars, nails, power actuated accessories, adhesives, rigid insulation, stickclips, caulking, compressive backer rod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, lintel reinforcement, sills, water repellents, cleaning agents, air barrier,shelf angles, fire stops, compartmentalization strips.

Tools and Equipment: Mason's tool box, masonry blades, mortar mixer, mortar board, mason's saw, power actuated tools, grinder, pallet jack, scaffolds, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongs, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, tiger torch, adhesive trowel, scraper (floor), drills, trowels.

Sub-task

8.01 Inspects substrates, anchors and flashings.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

8.01.01 knowledge of ties and anchoring systems

8.01.02 knowledge of water efficiency for flashing

8.01.03 knowledge of weepers

Sub-task

8.02 Installs flashings.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

8.02.01 knowledge of applications of flashing materials, anchors and barriers

8.02.02 knowledge of compartmentalization (air and fire flow)

8.02.03 ability to clean and prepare footing

Sub-task

8.03 Lays out wall and coursing.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

8.03.01	knowledge of structural components of walls
8.03.02	knowledge of horizontal and vertical reinforcing
8.03.03	knowledge of materials
8.03.04	knowledge of anchor plates
8.03.05	ability to work with measurements
8.03.06	ability to communicate with other trades

Sub-task

8.04 Installs masonry units and accessories.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

8.04.01	knowledge of anchors and ties
8.04.02	knowledge of expansion and contraction
8.04.03	knowledge of veneer support requirements
8.04.04	ability to maintain bonds and patterns
8.04.05	ability to build with lines and levels
8.04.06	ability to maintain measurement
8.04.07	ability to lay masonry units

Task 9 **Builds structural and/or foundation masonry walls.**

Related Components: Parging, waterproofing, masonry units, insulation, flashing, vertical/horizontal reinforcing imbedded plates, grout, ties (anchors) mortars, nails, power actuated accessories, adhesives, rigid insulation, stickclips, caulking, compressive backerod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, cleaning agents, air barrier, shelf angles, fire stops, compartmentalization strips, chalk line, batter boards.

Tools and Equipment: Lifting equipment, tower crane, grout pumps, parging trowel, hawk, clear waterlevel, laser level, pallet jacks, mason's tool box, masonry blades, mortar mixer, mortar board, mason's saw, power actuated tools, grinder, transit, pallet jack, scaffolds, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongs, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, propane torch, adhesive trowel, scraper (floor), drills, welding machines, trowels, jointers, caulking guns.

Sub-task

9.01 **Erects wall.** **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

9.01.01 knowledge of horizontal and vertical reinforcement

9.01.02 knowledge of wall bracing techniques

9.01.03 ability to maintain measures and bond

9.01.04 ability to lay masonry units

9.01.05 ability to tool joints

9.01.06 ability to install structural plates and horizontal reinforcing

9.01.07 ability to install waterproofing and dampproofing materials

9.01.08 ability to shore up walls

9.01.09 ability to install lintels and beams

Task 10 **Installs stone cladding.**

Related Components: Masonry units, air barrier, insulation, flashing, vertical/horizontal reinforcing, imbedded plates, grout, ties anchors, mortars, nails, power actuated accessories, adhesives, rigid insulation, stickclips, caulking, compressive backer rod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, cleaning agents, air barrier, shelf angles, fire stops, compartmentalization strips, stone bond.

Tools and Equipment: Torque wrenches, compressor, mason's tool box, masonry blades, mortar mixer, mortar board, mason's saw, power actuated tools, grinder, transit, pallet jack, scaffolds, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongues, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, propane torch, adhesive trowel, scraper (floor), drills, air hoses, bush hammer, surface scabbler, fastening equipment.

Sub-task

10.01 Prepares wall. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
no	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

10.01.01 knowledge of installation procedures

10.01.02 knowledge of different fasteners

10.01.03 ability to apply caulking

Sub-task

10.02 Installs stones. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
no	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

10.02.01 knowledge of types of stone bonding

10.02.02 ability to lay stones

10.02.03 ability to cut, face stone and polish

10.02.04 ability to select stones

Supporting Knowledge & Abilities

10.02.05 ability to install anchors

Task 11 **Lays masonry to prefabricated wall panels, columns covers, spandrels, balcony screens and other masonry panels in a factory.**

Related Components: Steel reinforcing, steel wire cables, form oil, fastening and anchoring systems, bonding agents, masonry products, mortar, grout, epoxy, cleaning agent.

Tools and Equipment: Jigs and forms, circular saws, transit level, high pressure washer, sponges, grout pump, mason's tool box, cement trowel, power trowel, pry bars, shims, vibrators, hand and torque wrenches, caulking gun, shovels, hoisting and rigging, slings, power tools, rakes, fall-arrest equipment, ladders, rope, swing stage.

Sub-task

11.01 Prepares forms or jigs to accept materials.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	no	yes	no	yes	NV	no	yes	yes	ND	NV

11.01.01 knowledge of bond breaking agents

11.01.02 ability to set forms or jigs

Sub-task

11.02 Installs materials and accessories to prefabricated units.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	no	yes	no	yes	NV	no	yes	yes	ND	NV

Supporting Knowledge & Abilities

11.02.01 knowledge of internal reinforcing and anchoring system

11.02.02 ability to align and level unit

Sub-task

11.03 Removes forms or jigs.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	no	yes	no	yes	NV	no	yes	yes	ND	NV

11.03.01 knowledge of safe practices

11.03.02 ability to remove reinforcing accessories

Sub-task

11.04 Prepares for delivery.

Supporting Knowledge & Abilities

(NOT COMMON CORE)

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
no	yes	no	yes	no	yes	NV	no	yes	yes	ND	NV

11.04.01 knowledge of storage or stacking procedures

11.04.02 knowledge of safe practices

11.04.03 knowledge of various procedures for surface preparation

11.04.04 knowledge of colour matching and testing for restoration

11.04.05 ability to perform mechanical mixing procedures

Sub-task

11.05 Erects prefabricated horizontal or vertical units.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	no	yes	yes	yes	NV	no	yes	yes	ND	NV

11.05.01	knowledge of rigging
11.05.02	knowledge of various fastening systems
11.05.03	knowledge of various grouting and caulking procedures
11.05.04	knowledge of different alignment equipment
11.05.05	ability to align and set in place panels and anchors
11.05.06	ability to communicate with other trades

BLOCK C

CHIMNEYS, FIREPLACES, MASONRY HEATERS AND REFRACTORY MATERIALS

Trends: *Greater code restrictions and more use of stainless steel are evident. The revitalization and reintroduction of alternative heating systems was also evident. Changes in new products were noted (e.g. insulation and other plastic castable materials). Increased use of corrosion resistant steel. The above developments are subject to regional variations.*

Task 12 **Lays bricks or other masonry units to build fireplaces, masonry heaters, residential, commercial and industrial chimneys.**

Related Components: Masonry units, air barrier, insulation, flashing, vertical/horizontal reinforcing, imbedded plates, grout, ties (anchors) mortars, adhesives, rigid insulation, stickclips, caulking, compressive backer rod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, cleaning agents, shelf angles, fire stops, spark arresters, liners, clean-out doors, metal caps, metal flashings, flueliner, firebrick, cast iron doors, grills, accessories, dampers, fireclay, motorcycle spokes, ceramic blanket, angle iron, castable, arch forms, arch templates, sheetmetal, ashdump, fresh air kit, corrugated cardboard, rigid insulation, facing material, lumber, polyethylene (plastic sheets).

Tools and Equipment: Fans, engineer scaffolding, mason's tool box, masonry saw, sponge, mortar tub, shovels, scaffolds, planks, mortar board, extension cord, lights, mason's drills and bits, circular saw, hand saw, claw hammer, garden hose, pail, masonry blades, mortar mixer, masons saw, power actuated tools, grinder, pallet jack, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongs, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, propane torch, adhesive trowel, scraper (floor).

Sub-task

12.01 Builds foundation. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	no	yes	yes	ND	NV

12.01.01 knowledge of waterproofing

12.01.02 knowledge of footings

12.01.03 knowledge of combustion systems

12.01.04 ability to prepare foundation

12.01.05 ability to excavate

12.01.06 ability to lay masonry units

Sub-task

12.02 Builds firebox.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

12.02.01	knowledge of structure support requirements for fireplaces
12.02.02	knowledge of types of fireplaces
12.02.03	knowledge of expansion and contraction of different materials
12.02.04	knowledge of different types of materials
12.02.05	knowledge of types and sizes of flues
12.02.06	knowledge of chemical products
12.02.07	ability to lay masonry units
12.02.08	ability to install masonry units and accessories

Sub-task

12.03 Builds in damper, smoke chambers and flues.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

12.03.01	knowledge of expansion and contraction
12.03.02	ability to work with hand tools in tight spaces
12.03.03	ability to cut material (fluelining)

Sub-task

12.04 Assembles precast masonry heater/stove units.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

12.04.01 knowledge of types of heaters

12.04.02 knowledge of expansion and contraction

12.04.03 ability to install accessories

12.04.04 ability to lay masonry units

12.04.05 ability to test combustion of fireplace

Sub-task

12.05 Faces fireplace.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

12.05.01 knowledge of various bonding methods and patterns

12.05.02 knowledge of corbelling

12.05.03 ability to install lintel

12.05.04 ability to install different hardware

Sub-task

12.06 Faces masonry heaters and accessories.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

12.06.01 knowledge of various bonding methods and patterns

12.06.02 ability to install different hardware

12.06.03 ability to install masonry units

Task 13 **Lays refractory or acid-resistant wall system/bricks to line or reline furnaces, kilns, ladles, vessels, tanks, and similar installations.**

Related Components: Insulation bricks, thermal ceramic bricks, lead bricks, lumber, bracing, carbon bricks, carbon mortar, high temperature mortar, cleaning agents, vessels, anchoring systems, lock-out procedures, membrane, welding, epoxy injections, ceramic insulation, plastics, acid-resistant brick, fire brick, wood forming, castables, refractories.

Tools and Equipment: Wheelbarrow, masonry saws, pails, bits, hoes, tile hammer, tile chisel, wrenches, claw hammer, forms, hydraulic jack, jack hammer, pump, mason's tool box, vibrator, welding rods, welder, electric winches, extension cords, conveyor, pneumatic jack hammer, drills, mixer, rope and ladders, fall arrest -system, heaters, spark arrester, skid steer, hoisting equipment, generator, ventilation system, ropes, sponge, electric fans, mixing calibration equipment, nozzles.

Sub-task

13.01 Prepares for reinstallation. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

13.01.01	knowledge of safety requirements
13.01.02	knowledge of lock-out procedures
13.01.03	knowledge of protective equipment
13.01.04	knowledge of engineered scaffolding
13.01.05	ability to remove existing lining

Sub-task

13.02 Prepares mortar and accessories. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

13.02.01	knowledge of injecting different materials (epoxy, castables)
13.02.02	ability to dip and lay firebricks and acid bricks

Sub-task

13.03 Installs materials. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

13.03.01	knowledge of ring arch
13.03.02	knowledge of different insulations
13.03.03	knowledge of castables
13.03.04	ability to lay material
13.03.05	ability to ram plastic
13.03.06	ability to set forms
13.03.07	ability to weld anchors/brackets
13.03.08	ability to pour and vibrate castables
13.03.09	ability to spray with nozzles

BLOCK D

CONSTRUCTION/LAYOUT OF MASONRY ARCHES

Trends: *No apparent changes indicated.*

Task 14 Builds templates for arches.

Related Components: Lumber, fastening systems.

Tools and Equipment: Mason's tool box, circular saw, jig saw, claw hammer, calculator, protractor, compass.

Sub-task

14.01 Selects materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

14.01.01	knowledge of basic mathematics
14.01.02	knowledge of geometric concepts
14.01.03	knowledge of construction techniques for templates
14.01.04	knowledge of different types of arches
14.01.05	ability to determine structural strength requirements for templates

Sub-task

14.02 Constructs template.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	no	yes	NV	yes	yes	yes	ND	NV

14.02.01	ability to set out the arch full size
14.02.02	ability to layout timber parts for support
14.02.03	ability to cut timber parts for support
14.02.04	ability to assemble template from full size layout

Task 15 Builds arch.

Related Components: Arch support, masonry units (e.g. bricks, stones), mortar, wedges, bracing.

Tools and Equipment: Mason's tool box, brick saw.

Sub-task

15.01 Places template.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

15.01.01 knowledge of supports and bracing

15.01.02 ability to determine type and location of arc, span, rise and depth

Sub-task

15.02 Forms arch.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

15.02.01 knowledge of geometry

15.02.02 knowledge of various masonry styles

15.02.03 knowledge of reinforcing materials

15.02.04 ability to lay masonry units to form masonry arches

15.02.05 ability to measure masonry units to size

15.02.06 ability to shape masonry units

15.02.07 ability to form spandrels

Sub-task

15.03 Removes template.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

15.03.01 knowledge of safety when removing template

15.03.02 ability to joint by using a jointer or trowel

15.03.03 ability to point bricks in arch

BLOCK E

RESTORATION

Trends: *Greater use of machines and grouting material including product improvement for restoration. Stress is on correct hand skills using traditional tools. Increased use of historical and archival information on buildings.*

Task 16 **Prepares mortar and grouting systems.**

Related Components: Sand, lime, cement, masonry products additives, dyes, restoration mortar, water, clay, fastening system, epoxy, plugging equipment, colouring agents, backer rod, fibreglass reinforcing, lumber, copper, sheet metal.

Tools and Equipment: Pumping system, mason's tool box, funnels, pails, compressors, air hoses, lighting system, ventilation system, scaffolds, forklift, pulley and hoisting system, hoses (air/water), extension cords, power drills, pneumatic tools.

Sub-task

16.01 Mixes mortar and/or grout. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

16.01.01 ability to determine amount and depth of mortar needed

16.01.02 ability to select appropriate tools

16.01.03 ability to determine causes of deterioration

16.01.04 ability to secure documentation

16.01.05 ability to interpret historical specifications

Sub-task

16.02 Applies mortar and/or grout to required area. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

16.02.01 knowledge of procedures used to match original jointing

16.02.02 knowledge of tools used to match original jointing

Task 17 Rebuilds masonry work.

Related Components: Mortars, restoration mortars, grouts, lumber, epoxy, nails, sheetmetal, wire ties, masonry unit, insulation, fastening system, bracing system, steel angles, structural steel, various aggregates, gunny sacks, plastic sheets, tarps, mortar and grout additives, moisture retardants and curing agents, injection system, vapour and air barriers, flashings, pins.

Tools and Equipment: Mason's tool box, specialized chisels, saws, forklift, scaffolding, rubbing stones, sculpturing jointers, hoisting equipment, clamping systems, bracing equipment, compressors, welding machines, hammer, circular saw, pry bars, sledge hammer, excavation equipment, cutting torches, pneumatic tools, hydraulic tools, drafting equipment, pinning equipment, temperature gauges, grout bag, transits, lasers, photographic equipment, computers, angle grinder.

Sub-task

17.01 Disassembles unit masonry construction. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

17.01.01 knowledge of materials used in original construction

17.01.02 knowledge of principles for removing units

17.01.03 knowledge of the retrieving process

Supporting Knowledge & Abilities

17.01.04	knowledge of public safety signs and their locations
17.01.05	ability to select materials for disassembly
17.01.06	ability to identify proper storage facilities
17.01.07	ability to operate a camera
17.01.08	ability to record existing conditions of work area
17.01.09	ability to clean work area
17.01.10	ability to remove mortar and masonry units using appropriate tools
17.01.11	ability to plan the sequence of replacements
17.01.12	ability to use lifting equipment
17.01.13	ability to code appropriate masonry units

Sub-task

17.02 Prepares restoration work area for reinstallation.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

17.02.01	knowledge of installing backing/blocking for security purposes
17.02.02	ability to install building paper in rough opening
17.02.03	ability to fasten frame
17.02.04	ability to insulate cavities around frame
17.02.05	ability to use cleaning agents

Sub-task

17.03 Reinstalls masonry and accessories.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

17.03.01	knowledge of jointing techniques
17.03.02	knowledge of matching process
17.03.03	ability to install reinforcing and anchoring accessories
17.03.04	ability to level units
17.03.05	ability to grout wall
17.03.06	ability to perform final cleaning and visual inspection

Task 18 Restores existing masonry work.

Related Components: Mortars, restoration mortars, grouts, lumber, epoxy, nails, sheetmetal, wire ties, masonry unit, insulation, fastening system, bracing system, steel angles, structural steel, various aggregates, gunny sacks, plastic sheets, tarps, mortar and grout additives, moisture retardants and curing agents, injection system, vapour and air barriers, flashings, pins.

Tools and Equipment: Mason's tool box, specialized chisels, saws, forklift, scaffolding, personal protective equipment, rubbing stones, sculpturing jointers, hoisting equipment, clamping systems, bracing equipment, compressors, welding machines, hammer, circular saw, pry bars, sledge hammer, excavation equipment, cutting torches, pneumatic tools, hydraulic tools, drafting equipment, pinning equipment, temperature gauges, grout bag, transits, lasers, photographic equipment, computers.

Sub-task

18.01 Removes deteriorated components.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

18.01.01	knowledge of the causes of deterioration
18.01.02	knowledge of mortar classifications and curing practices
18.01.03	ability to select materials and accessories
18.01.04	ability to chisel out mortar joints to be repointed

Sub-task

18.02 Prepares work surface.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

18.02.01	knowledge of the common aesthetic designs
18.02.02	ability to determine type and size of needling required
18.02.03	ability to erect and dismantle needles
18.02.04	ability to repair damaged area
18.02.05	ability to determine type of masonry units required to maintain colour, bond and pattern of work
18.02.06	ability to cut units to size
18.02.07	ability to install components and accessories

Task 19 Cleans masonry.

Related Components: Water, sand, chemicals, argils, dry ice, specific cleaning agents, lumber, nails, wire, rope, grease, pails.

Tools and Equipment: Plastic sheets, gunny sacks, pumps, compressor, water hoses, sprinklers, weeping hoses, pressure gauges, scaffolding, personal protective equipment, basins, forklift, shovels, rakes, brooms, special brushes, lighting equipment, hoisting equipment, portable generator, rubbing stone, scrapers, compressors, hoses, nozzles.

Sub-task

19.01 Applies cleaning agent.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

19.01.01	knowledge of safety practices
19.01.02	knowledge of cleaning compounds and techniques
19.01.03	ability to assemble proper equipment and materials for cleaning
19.01.04	ability to use cleaning compounds

Task 20 Protects masonry surfaces.

Related Components: Chemical agents, flashings, membranes, primers, mortar additives, caulking, parging, sealants, barriers.

Tools and Equipment: Tarpauline, masking tape, small pumps, sprayers, scaffolding, brushes, roller, parges, trowels, torches, wheel barrows, mixers, electrical extension, plastic trowels, mortar bond, hawk, masonry tool box, generator, scraper, rubbing stones.

Sub-task

20.01 Prepares surface.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

20.01.01	knowledge of masonry materials
20.01.02	knowledge of specifications for masonry units and mortar
20.01.03	ability to select materials and accessories

Sub-task

20.02 Applies sealants and coatings materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

20.02.01	knowledge of surfaces and waterproofing materials
20.02.02	knowledge of necessary repair procedures
20.02.03	ability to remove masonry acid or non-acid stains
20.02.04	ability to determine the concentration of solutions for stain removals
20.02.05	ability to follow manufacturers specifications when dealing with chemicals and sealants/coatings

BLOCK F

ORNAMENTAL MASONRY

Trends: *Increased use of user friendly products (e.g. do it yourself interlocking). Speedy installation, due to spacers, of glass blocks. Greater demand for aesthetic, visual appeal in masonry was noted.*

Task 21 **Lays masonry units to build walls, piers, various floors, patios and other similar installations.**

Related Components: Masonry units, specialized and regular mortars, caulking compounds, different aggregates, wire reinforcement, concrete, electrical components, mechanical components, membranes, lime.

Tools and Equipment: Mason's tool box, compactor, grids, mason's saw, mixer, excavation equipment, hoisting equipment, grinding equipment, cutting equipment, sifting equipment, power tools, hoses, electrical cords, generator, pails, wheelbarrow, transit, specialized chisels, guillotine, lumber, forming equipment, plastic sheets, propane torch, hand sprayers.

Sub-task

21.01 Prepares site.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

21.01.01	knowledge of frostlines
21.01.02	knowledge of material and equipment for site preparation
21.01.03	ability to build masonry foundation
21.01.04	ability to establish finish grade

Sub-task

21.02 Installs units and accessories.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

21.02.01	knowledge of different types of materials
21.02.02	knowledge of different bondings and decorative patterns
21.02.03	knowledge of factors affecting durability, such as local frost level, foundation, batter and backing, mortar, height, expansion joints, flashing and caping

Supporting Knowledge & Abilities

21.02.04	ability to lay out location of installation
21.02.05	ability to make wooden storey poles
21.02.06	ability to lay masonry units to specified bond patterns
21.02.07	ability to bond pilaster in wall
21.02.08	ability to make provisions for tying-in or bonding intersections
21.02.09	ability to lay out bond and erect the pier

Task 22 Installs glass blocks.

Related Components: Masonry units, mortars, spacers, fastening systems, tracks, expansion strips, caulking compounds, screws, nails, colouring agents, additives, insulation, backer rod, lumber, plastic spacers.

Tools and Equipment: Rags, drills, mason's tool box, plastic jointers, power actuated tools, mixer, wheelbarrow, waterhose, electrical extension, cords, lights, tarps, sponges, potable water, generator, scaffold, wood wedges, grinder, hoisting equipment.

Sub-task

22.01 Prepares site.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

22.01.01	ability to measure accurately
22.01.02	ability to install starter strip

Sub-task

22.02 Installs units and accessories.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

22.02.01	knowledge of chased or recessed method
22.02.02	knowledge of different types of ties and spacing requirements
22.02.03	knowledge of optimum panel size
22.02.04	knowledge of waterproof materials and their advantages in use considering durability, handling and cost
22.02.05	knowledge of the underlying principles of expansion and control joints
22.02.06	ability to lay glass blocks without damaging them
22.02.07	ability to tool joints using a trowel
22.02.08	ability to clean glass block without damaging exposed surfaces

Task 23 Installs overlay applications.

Related Components: Lumber, screws, anchoring systems, membranes, mortars, epoxy, bonding agents, additives, caulking, masonry units, wire mesh, cement board.

Tools and Equipment: Mason's tool box, hawk, plastering trowels, laser, transit, hoisting equipment, power drills, saws, generator, safety equipment, scaffolding system, wedges.

Sub-task

23.01 Prepares surface.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

23.01.01	knowledge of various types of mortars and bonding agents
23.01.02	knowledge of safety regulations and procedures

Sub-task

23.02 Applies parging.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

23.02.01	knowledge of parging thickness
23.02.02	ability to mix various types of mortars by various methods
23.02.03	ability to parge

Sub-task

23.03 Installs overlay materials.

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

Supporting Knowledge & Abilities

23.03.01	knowledge of various types of patterns
23.03.02	knowledge of various fastening systems for mortarless overlay
23.03.03	knowledge of various types of adhesives
23.03.04	knowledge of bonding/patterns
23.03.05	ability to gauge to heights
23.03.06	ability to work with mechanical tools (floor sanders, power trowel)

Task 24 Installs sculptured masonry.

Related Components: Masonry units, mortars, fasteners, fastening agents, water, masonry cements, sand, dyes, grit system, overhead projector (image enlargement), expansion and contraction joints, adjustable veneer ties, soft joints, masonry units, air barrier, insulation, flashing, ties (anchors) mortars, nails, power actuated accessories, adhesives, rigid insulation, stickclips, caulking, compressive backer rod, insulation tape, weepers, drills, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, cleaning agents, air barrier, shelf angles, fire stops.

Tools and Equipment: Plastic and wood spacers, cleaning equipment, manual and pneumatic chisels, specialized respiratory equipment, mason's tool box, masonry blades, mortar mixer, mortar board, mason's saw, power actuated tools, grinder, transit, pallet jack, scaffolds, brushes, planking, flat wheelbarrow, wheelbarrow, brick tongs, ladder, forklift, water hoses, water pails, cleaning brushes, rubber gloves, safety equipment, grout pumps, insulation saw, propane torch, adhesive trowel, scraper (floor), drills, welding machines.

Sub-task

24.01 Prepares surfaces.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

24.01.01 knowledge of materials

24.01.02 knowledge of patterns to be followed

24.01.03 ability to refer to sketch or numbered units

Sub-task

24.02 Installs units.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	NV	yes	yes	yes	ND	NV

24.02.01 knowledge of detail drawings

24.02.02 ability to lay masonry units

24.02.03 ability to maintain bonds and patterns

APPENDICES

TOOLS AND EQUIPMENT

The bricklayer occupation requires proper use of a number of tools, machines and equipment. The list below provides a list of necessary bricklayer tools and equipment. Survey instruments and power tools are supplied by the employer.

Mason's Tool Box

adjustable wrench
bolster
boltcutters
brushes
carpenters square (2')
chalk line
chisels
corner blocks
face hammer
jointer
knives
knotched trowel
level
line blocks
line holders
line pins
line trigs
mash hammer
mason's chisels
mason's hammer
mason's level (4',2')
mason's line
mason's point
mason's spacing rule
mason's square
mason's trowel
measuring tape
pitching chisel
plastering trowel
pliers
plugging chisel
plumb-bob
pointing chisel
pointing trowel
pry bar
raker-wheel type
refractory hammer
safety glasses
slickers
splitting chisel
staple gun
straight chisel
toothed chisel
tuck-pointer
wire snips

Personal Protective Equipment

apron
eye protection
face shields
fire blankets
fire extinguishers
first aid kit
gas detection equipment
gloves
hearing protection
heat and cold protection
highly visible safety vest
insulated gloves
lock-out tags/locks
protective headwear
respiratory protection
safety boots/footware
safety harness and fall arresting system
skin barrier creams

Information Related Materials

blueprints and specifications
conservation manuals
construction safety code
contract documents
engineering drawings
material safety data sheets
national building codes
rigging and hoisting manuals
technical manuals
warranty documents
WHMIS labels

Lifting Equipment

block and tackle
bosun's chairs
continuous elevator scaffolding
cranes
forklifts
handcarts
hoisting equipment
ladders
lewis pins
off-slab powered platforms
on-slab powered platforms
platform materials
powered boom platforms
push-around powered platforms
scaffolds
shackles
slings
stone clamps
suspended platforms
suspended scaffolds
swing stage
work cages

Related Hand Tools, Power Tools and Equipment

arc welder
asphalt applicator
axe hammer
ball-peen hammer
blow torch
brick and stone cutter
brick tongs
brooms
bush hammer
C- clamps
carpenter's square
caulking gun
caulking tool
circular saw
claw hammer
cleaning agents
compressors
dead blow hammer
diamond or abrasive disks
drills
droves
float
gauge rods
generators
grinders
hammer drill
hawk
hydraulic splitter
jackhammer
jig saw
laser level
low velocity explosive-actuated fastening tool
masonry saw
masonry table saw
manual splitter
metal ties
mortar board
mortar boxes
mortar buggy
mortar hods
mortar hoe
mortar mixers
patent hammer
pencil vibrator
pick axe
pneumatic gun
pneumatic hammer
portable sprayer
propane heaters
pry bar
quick cutsaw
rubber mallet
sandbox
sandscreen
scrapers
screwdrivers
scutch
shims/spacers
shovels
sledgehammer
socket set/wrench
sprayers
sponges
storey poles
straightedge
tarpaulins
templates
trammel points
transit
vacuum cleaners
water buckets
water drums
water hose
wheelbarrow
wooden paddles
wrenches

GLOSSARY

abutment — a support wall carrying the end of a bridge or span and sustaining the pressure of the earth next to it.

accelerator — a material that speeds hardening of concrete or mortar.

admixtures — materials added to mortar as water repellents or colouring agents or to retard or hasten setting.

alumina — a mineral contained in clay used for brickmaking.

angle iron — a structural section of steel in the form of a 90 degree angle used, in certain situations, to support brickwork.

back-up — that part of a masonry wall behind the exterior facing.

bay — any division or compartment of an arcade, roof, etc. Thus each space from pillar to pillar in a cathedral is called a bay or severy.

bearing blocks — small blocks of stone built in a wall to support the end of particular beams.

bearing wall — one which supports a vertical load in addition to its own weight.

bed joint

a) the horizontal layer of mortar on which a masonry unit is laid;
b) a horizontal joint, or one perpendicular to the line of pressure; and
c) a joint between two horizontal courses of brick.

blocking — a method of bonding two adjoining or intersecting walls, not built at the same time, by means of offsets whose vertical dimensions are not less than 200 mm (8").

blocking course — a course of stone placed on top of a cornice crowning the walls.

bond

a) tying various parts of a masonry wall by lapping units one over another or connecting with metal ties;
b) patterns formed by exposed faces of units; and
c) adhesion between mortar or grout and masonry units of reinforcement.

bond beam — a horizontal reinforced concrete masonry beam designed to strengthen a masonry wall and reduce the probability of cracking.

bond course — the course consisting of units which overlap more than one wythe of masonry.

brick — a solid masonry unit of clay or shale formed into a rectangular prism, while pliable, and burned or fired in a kiln.

brick veneer — the outside facing of brickwork used to cover a wall built of other material; usually refers to brick walls covering a frame building.

brickwork — masses of wall built of bricks laid in mortar.

bullnose — convex rounding of a member, such as the front edge of a stair tread, a concrete block or window sill.

buttered joint — a very thin mortar joint made by scraping a small quantity of mortar with the trowel on all edges of the brick and laying it without the usual mortar bed.

buttering — placing mortar on a masonry unit with a trowel.

cavity wall — a wall built of masonry units arranged to provide a continuous air space 50 to 75 mm (2 to 3") thick. Facing and backing wythes are connected with rigid metal ties.

cell — one of the hollow spaces in building tile.

cement — a burned mixture of clay and limestone pulverized (crushed) for making mortar or concrete.

centre — temporary wooden structure used to support masonry units during the construction of arches.

chimney lining — fire clay or terra-cotta material made for use inside of a chimney.

clean out — an opening in the first course of a reinforced concrete masonry wall for removal of mortar protrusions and droppings. Also an opening under a fireplace for removing ashes.

concrete masonry unit — a hollow or solid unit made of Portland cement and suitable aggregates. Units are often referred to by the type of aggregate used in their manufacture: cinder block and lightweight block.

coping — the material or masonry unit forming a cap or finish on top of a wall, pier, pilaster, chimney. It protects masonry below from penetration of water above.

corner block — a concrete masonry unit with a flat end for construction of the end or corner of a wall.

course	a) one of the continuous horizontal layers of units, bonded with mortar in masonry; b) a horizontal row of brick in a wall; and c) each separate layer in stone, brick or other masonry.
course bed	stone, brick or other building material in position upon which other material is to be laid.
curtain wall	a nonbearing wall. Built for the enclosure of a building, it is not supported at each storey.
dowels	straight metal bars used to connect two sections of masonry; also a two-piece instrument for lifting stones.
drip	a projecting piece of material, shaped to throw off water and prevent its running down the face of wall or other surface. Also: A slot cut in the bottom of a projected stone, to interrupt the capillary attraction of rain water.
Dutch bond	the arrangement of bricks forming a modification of Old English Bond made by introducing a header as the second brick in every alternate stretching course, with a three-quarter brick beginning the other stretching courses.
English bond	usually called Old English Bond, the bond which is made by alternate courses of stretchers and headers with a 50 mm (2") piece or closer next to the corner header. Also: Alternate courses of headers and stretchers.
expansion anchor	a metal expandable unit inserted into a drilled hole that grips stone by expansion.
expansion joint	a vertical joint or space to allow for expansion due to temperature changes.
face	the exposed surface of a wall or masonry unit. Also: The surface of a unit designed to be exposed in the finished masonry.
facing	any material, forming a part of a wall, used as a finished surface. Also: The projecting courses at the base of a wall for the purpose of distributing the weight over an increased area; a footing.
fire brick	brick made of refractory ceramic material which will resist high temperatures.
flashing	sealing material to prevent water penetration and/or provide water drainage.

flat stretcher course — a course of stretchers set on edge and exposing their flat sides on the surface of the wall. Frequently done with brick finished for the purpose of the flat side such as enamelled or glazed brick.

footing — the broadened base of a foundation wall or other superstructure.

foundation wall — that portion of a load-bearing wall below the level of the adjoining grade, or below first floor beams or joists.

frog — a depression in the bed surface of a brick. Sometimes called a panel.

grout — a glue like component of high water-cement ratio, permitting it to be poured into spaces within masonry walls. Grout consists of Portland cement, lime and aggregate. It is often formed by adding water to mortar.

header — a masonry unit which overlaps two or more adjoining wythes of masonry to tie them together. Often called bonder. Also: A brick laid on its flat side across the thickness of the wall so as to show the end of the brick on the surface of the wall.

header block — concrete masonry units made with part of one side of the height removed to provide space for bonding with adjoining units such as brick.

heading joint — the vertical mortar joint between ends of masonry units. Often called cross joint.

hearth — that portion of a fireplace level with the floor, upon which the fire is built. The rear portion extending into the fire opening is known as the back hearth.

hollow masonry unit — one whose net cross-sectional area in any plane parallel to the bearing surface is less than 75 per cent of the gross.

hollow wall — a wall built of masonry units arranged to provide air space within the wall. The separated facing and backing are bonded together with masonry units.

joint — the narrow space between adjacent stones, bricks of other building blocks usually filled with mortar.

jointing — the process of facing or tooling the mortar joints.

key — the relative position of the headers of various courses with reference to a vertical line.

lateral support — means whereby walls are braced either vertically or horizontally by columns, pilasters, crosswalls, beams, floors and roofs.

lime	the base of mortar and the result of limestone burned in a kiln until the carbon dioxide has been driven off.
lintel	a beam placed over an opening in a wall.
lintel block	U or W shaped concrete block used in construction of horizontal bond beams and lintels.
load-bearing tile	tile for use in masonry walls carrying superimposed loads.
mantel	a shelf projecting beyond the chimney breast above the fireplace opening.
masonry	brick, tile and stone or combination thereof, bonded with mortar. Also: that branch of construction dealing with plaster, concrete construction and the laying up of stone, brick, tile and other such units with mortar.
masonry cement	a mill-mixed mortar to which sand and water must be added.
mortar	a plastic mixture of glue like materials, fine aggregate and water.
mortar board	a board about 1 m square (3' square) laid on the scaffold to receive the mortar ready for the use of a bricklayer.
mortar box	the box in which the mortar is mixed and softened by water for use.
needle	a temporary member thrust for use in underpinning.
non-load-bearing tile	tile designed for use in masonry wall in skeleton form construction, wholly supported at each storey.
panel wall	a non-load-bearing wall in skeleton form construction, wholly supported at each storey.
parging	the process of applying a coat of cement mortar on masonry.
party wall	a wall used for joint service by adjoining buildings.
pier	an isolated column of masonry.
pilaster	a wall portion projecting from either or both wall faces and serving as a vertical column and/or beam. Also: A pillar of brick work, rectangular in form, used as a supplement to a pier, usually projecting one-third of the thickness of the wall.
pointing	trowelling mortar into a joint after the masonry units are laid.

Portland cement	a cement made by a mixture of various clays, chalk, limestone, river mud, slate and the like, which are mixed together, burned, ground into powder and put through a sieve with fine meshes.
reinforced masonry	masonry units, reinforcing steel, grout and/or mortar combined to act together in resisting forces.
sill block	a solid concrete masonry unit used for sills of openings.
smoke chamber	the space in a fireplace immediately above the throat where the smoke gathers before passing into the flue and narrowed by corbelling to the size of the flue lining above.
solid masonry unit	one whose net cross-sectional area in every place parallel to the bearing surface is 75 per cent or more of the gross.
solid masonry wall	a wall built of solid masonry units, laid contiguously, with joints between units completely filled with mortar.
stretcher	a masonry unit laid with its greatest dimension horizontal and its face parallel to the wall face.
stringing mortar	the name of a method where a bricklayer picks up mortar for a large number of brick and spreads it before laying the brick.
temper	to mix so as to get the mortar in the proper condition for use.
template	any form or pattern, such as centring, over which brickwork may be formed.
tie	any unit of material that connects masonry to masonry or other materials.
tooling	compressing and shaping the face of a mortar joint with a special tool other than a trowel.
veneer wall	is a non masonry back up wall.
weep holes	openings in mortar joints of facing materials at level of flashing, to let moisture escape.
winterizing	the process of organizing the work site for winter operation, which include heating of work area, providing proper storage of materials, warming sand and water and protecting masonry work in progress.
wythe	each continuous vertical section of masonry one unit in thickness. Also: the thickness of masonry separating flues in a chimney. Also called withe or tier.

BLOCKS AND TASKS WEIGHTING

BLOCK A WORK RELATED ACTIVITIES

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	15	20	15	22	10	10	NV	25	17	20	ND	NV	17 %

Task 1 Determines project requirements, building codes and safety requirements from blueprints and specifications.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	16	15	15	16	10	25	NV	25	30	17	ND	NV	19 %

Task 2 Uses tools, machines, equipment and materials.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	20	10	40	13	10	10	NV	15	10	18	ND	NV	16 %

Task 3 Assembles, dismantles, erects scaffolding, rigging and hoisting equipment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	11	15	10	15	10	10	NV	13	10	17	ND	NV	12 %

Task 4 Installs membrane, air barrier and insulation.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	9	10	10	10	5	10	NV	11	10	13	ND	NV	10 %

Task 5 Winterizes job site.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	9	5	5	7	5	5	NV	4	3	5	ND	NV	5 %

Task 6 Prepares mortar.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	15	15	10	12	15	15	NV	9	7	17	ND	NV	13 %

Task 7 Builds cavity wall.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	20	30	10	27	45	25	NV	23	30	13	ND	NV	25 %

BLOCK B MASONRY WALL AND COLUMN SYSTEM

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	16	35	37	25	65	30	NV	30	50	50	ND	NV	38 %

Task 8 Builds veneer walls.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	39	50	45	43	50	35	NV	25	45	44	ND	NV	42 %

Task 9 Builds structural and/or foundation masonry walls.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	31	40	35	33	25	35	NV	38	45	34	ND	NV	35 %

Task 10 Installs stone cladding.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	15	5	20	13	20	20	NV	32	5	14	ND	NV	16 %

Task 11 Lays masonry to prefabricated wall panels, columns covers, spandrels, balcony screens and other masonry panels in a factory.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	15	5	0	11	5	10	NV	5	5	8	ND	NV	7 %

BLOCK C CHIMNEYS, FIREPLACES, MASONRY HEATERS AND REFRACTORY MATERIALS

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	24	25	23	20	5	20	NV	8	10	10	ND	NV	16 %

Task 12 Lays bricks or other masonry units to build fireplaces, masonry heaters, residential, commercial and industrial chimneys.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	60	60	90	74	20	50	NV	50	50	50	ND	NV	56 %

Task 13 Lays refractory or acid-resistant wall system/bricks to line or reline furnaces, kilns, ladles, vessels, tanks, and similar installations.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	40	40	10	26	80	50	NV	50	50	50	ND	NV	44 %

BLOCK D CONSTRUCTION/LAYOUT OF MASONRY ARCHES

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	25	5	7	12	3	10	NV	10	3	5	ND	NV	9 %

Task 14 Builds templates for arches.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	38	50	25	35	10	20	NV	40	25	30	ND	NV	30 %

Task 15 Builds arch.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	62	50	75	65	90	80	NV	60	75	70	ND	NV	70 %

BLOCK E RESTORATION

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	10	10	10	12	15	20	NV	20	10	10	ND	NV	13 %

Task 16 Prepares mortar and grouting systems.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	20	15	22	21	10	15	NV	20	10	15	ND	NV	16 %

Task 17 Rebuilds masonry work.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	26	30	35	36	50	30	NV	20	40	30	ND	NV	33 %

Task 18 Restores existing masonry work.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	29	30	25	26	25	30	NV	20	40	25	ND	NV	28 %

Task 19 Cleans masonry.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	12	15	10	9	10	15	NV	20	5	20	ND	NV	13 %

Task 20 Protects masonry surfaces.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	13	10	8	8	5	10	NV	20	5	10	ND	NV	10 %

BLOCK F ORNAMENTAL MASONRY

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	10	5	8	9	2	10	NV	7	10	5	ND	NV	7 %

Task 21 Lays masonry units to build walls, piers, various floors, patios and other similar installations.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	33	60	40	50	50	55	NV	25	80	30	ND	NV	47 %

Task 22 Installs glass blocks.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	29	15	20	15	40	17	NV	25	10	30	ND	NV	22 %

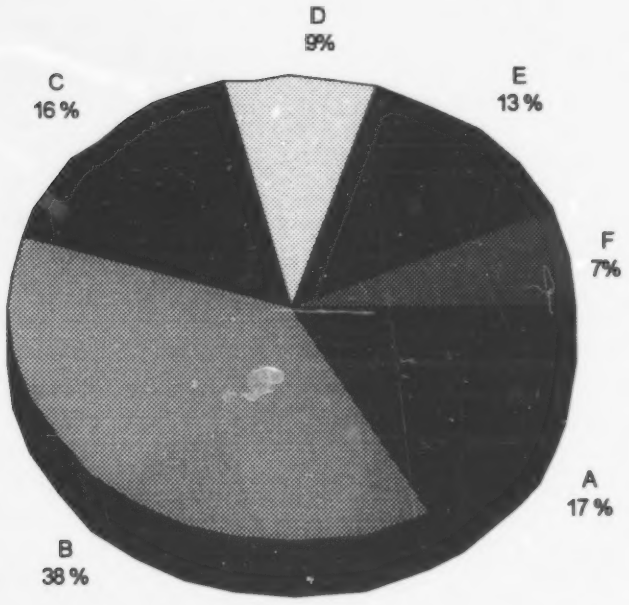
Task 23 Installs overlay applications.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	24	15	30	18	5	17	NV	25	5	30	ND	NV	19 %

Task 24 Installs sculptured masonry.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	14	10	10	17	5	11	NV	25	5	10	ND	NV	12 %

PIE CHART*
Bricklayer



TITLES OF BLOCKS

Block A	Work Related Activities	Block D	Construction/Layout of Masonry Arches
Block B	Masonry Wall and Column System	Block E	Restoration
Block C	Chimneys, Fireplaces, Masonry Heaters and Refractory Materials	Block F	Ornamental Masonry

* The average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from one hundred up to one hundred and fifty multiple choice questions on each examination.

BRICKLAYER (2000)

BLOCKS	TASKS	SUB-TASKS
A **Work Related Activities**	**1.** Determines project requirements, building codes and safety requirements from blueprints and specifications.	1.01 Reads blueprints, specifications and other contract documents.
		1.02 Measures dimensions on drawings and interpolates according to scale.
		1.03 Conducts job site safety assessment.
		1.04 Makes rough sketches of masonry work.
	2. Uses tools, machines, equipment and materials.	2.01 Uses hand tools.
		2.02 Uses portable power tools.
		2.03 Operates machines and equipment.
		2.04 Uses material handling equipment.
		2.05 Performs trade related welding activities.
	3. Assembles, dismantles, erects scaffolding, rigging and hoisting equipment.	3.01 Selects scaffolds and hoisting equipment.
		3.02 Erects scaffolds.
		3.03 Hoists equipment.
		3.04 Inspects scaffolds and hoisting equipment.
		3.05 Works on scaffolds.
		3.06 Dismantles scaffold and hoisting equipment.
	4. Installs membrane, air barrier and insulation.	4.01 Prepares substrates.
		4.02 Applies membrane to substrate.
		4.03 Installs insulation to membrane or substrate.
		4.04 Installs air/ moisture barrier.
	5. Winterizes job site.	5.01 Covers work and supply area.
		5.02 Heats work and supply area.
	6. Prepares mortar.	6.01 Determines type of mortar.
		6.02 Mixes mortar.
	7. Builds cavity wall.	7.01 Builds back-up wall.
		7.02 Builds exterior wythe.
B **Masonry Wall and Column System**	**8.** Builds veneer walls.	8.01 Inspects substrates, anchors and flashings.
		8.02 Installs flashings.
		8.03 Lays out wall and coursing.
		8.04 Installs masonry units and accessories.
	9. Builds structural and/or foundation masonry walls.	9.01 Erects wall.

BRICKLAYER (2000)

BLOCKS	TASKS	SUB-TASKS					
	10. Installs stone cladding.	10.01 Prepares wall.	10.02 Installs stones.				
	11. Lays masonry to prefabricated wall panels, columns covers, spandrels, balcony screens and other masonry panels in a factory.	11.01 Prepares forms or jigs to accept materials.	11.02 Installs materials and accessories to prefabricated units.	11.03 Removes forms or jigs.	11.04 Prepares for delivery.	11.05 Erects prefabricated horizontal or vertical units.	
C **Chimneys, Fireplaces, Masonry Heaters and Refractory Materials**	**12.** Lays bricks or other masonry units to build fireplaces, masonry heaters, residential, commercial and industrial chimneys.	12.01 Builds foundation.	12.02 Builds firebox.	12.03 Builds in damper, smoke chambers and flues.	12.04 Assembles precast masonry heater/stove units.	12.05 Faces fireplace.	12.06 Faces masonry heaters and accessories.
	13. Lays refractory or acid-resistant wall system/bricks to line or reline furnaces, kilns, ladles, vessels, tanks, and similar installations.	13.01 Prepares for reinstallation.	13.02 Prepares mortar and accessories.	13.03 Installs materials.			
D **Construction/Layout of Masonry Arches**	**14.** Builds templates for arches.	14.01 Selects materials.	14.02 Constructs template.				
	15. Builds arch.	15.01 Places template.	15.02 Forms arch.	15.03 Removes template.			
E **Restoration**	**16.** Prepares mortar and grouting systems.	16.01 Mixes mortar and/or grout.	16.02 Applies mortar and/or grout to required area.				
	17. Rebuilds masonry work.	17.01 Disassembles unit masonry construction.	17.02 Prepares restoration work area for reinstallation.	17.03 Reinstalls masonry and accessories.			
	18. Restores existing masonry work.	18.01 Removes deteriorated components.	18.02 Prepares work surface.				

BRICKLAYER (2400)

BLOCKS	TASKS	SUB-TASKS		
F **Ornamental Masonry**	**19.** Cleans masonry.	19.01 Applies cleaning agent.		
	20. Protects masonry surfaces.	20.01 Prepares surface.	20.02 Applies sealants and coatings materials.	
	21. Lays masonry units to build walls, piers, various floors, patios and other similar installations.	21.01 Prepares site.	21.02 Installs units and accessories.	
	22. Installs glass blocks.	22.01 Prepares site.	22.02 Installs units and accessories.	
	23. Installs overlay applications.	23.01 Prepares surface.	23.02 Applies parging.	23.03 Installs overlay materials.
	24. Installs sculptured masonry.	24.01 Prepares surfaces.	24.02 Installs units.	